

required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct said fees from Deposit Account No. 01-2508/11897.0100.CPUS00.

#### AMENDMENTS

Please amend claims 1, 12 and 36 to read as follows:

1. A particle comprising a triazole fungicide dispersed in a polymer matrix, provided that the polymer matrix does not comprise polyethylene.
12. A fungicidal composition comprising:
- (a) a particle comprising a triazole fungicide dispersed in a polymer matrix, provided that the polymer matrix does not comprise polyethylene, and
  - (b) an agricultural adjuvant.
36. A method for the treatment or prophylaxis of a fungal disease in a target plant wherein the method comprises contacting a plant cell, a plant tissue, or a seed with a particle wherein the particle comprises a triazole fungicide dispersed in a polymer matrix, provided that the polymer matrix does not comprise polyethylene.

#### Regarding the amendments.

Claims 1, 12 and 36 were amended to exclude polyethylene from the class of polymers that microparticles of the present invention can comprise. Applicants submit that this amendment does not comprise new matter; it simply deletes microparticles comprising polyethylene from the scope of protection sought. Such narrowing of the claims to avoid having them read on the prior art does not constitute adding new matter. *In re Johnson and Farnham*, 558 F.2d 1008, 194 U.S.P.Q. 187, 196 (CCPA 1977).

**Acknowledgment of claims 46-51 requested.**

Claims 46-51 were added by an amendment filed March 26, 2001 but they have not been acknowledged by the Examiner. Applicants respectfully request that these claims be acknowledged.

**RESPONSE TO OFFICE ACTION**

**Rejection under 35 U.S.C. § 102(b).**

Claims 1, 7-12, 17, and 18 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by French Patent 2 702 929 issued to Autant et al. (the Autant reference). Applicants respectfully traverse.

The Autant reference is generally directed to microparticles comprising a matrix and at least one biocidal agent. The matrix of Autant is made from one or more meltable hydrophobic constituents chosen from waxes; linear saturated hydrocarbons of a molecular weight between 500 and 3000; polyethylene waxes of the molecular weight between 500 and 3000; linear fatty acid amides and particularly stearamide; ethylene bistearamide; and their mixtures (Autant, p. 5; lines 5-13). The only polymers taught by Autant are linear saturated hydrocarbon polymers (i.e., polyethylenes).

The microparticles taught by Autant are made by dispersing or dissolving the biocidal agent(s) into a molten matrix constituent, fractionating the mixture in the form of a liquid or semi-liquid of the desired form and dimensions, and hardening the microparticles by cooling (Autant, p. 6, lines 11-14). Because the method of Autant depends on melting the matrix material and dispersing the active therein, the matrix constituents are limited to materials that

melt at moderate temperatures (Autant, p. 4, line 10-12). The Autant reference specifically teaches materials with a fusion temperature of less than 150 °C (Autant, p. 4, lines 12-13). Most of the preferred polymer materials of the instant invention have melting points greater than 150 °C.

The claims have been amended to exclude polyethylene from the scope of protection sought. Applicants respectfully request that the rejection under 35 U.S.C. § 102(b) be withdrawn.

**Rejection under 35 U.S.C. § 103(a).**

The instant claims have been rejected as allegedly being unpatentable under 35 U.S.C. § 103(a) over Tsuei et al. (U.S. Patent 5,589,194, the Tsuei reference) in view of the Autant reference and further in view of Kanda et al. (EP 0 201 214, the Kanda reference), Stock (Abstract, 1996, the Stock reference) and Russell et al (WO 03732, the Russell reference).

The Tsuei reference is directed to microcapsules prepared by dissolving an active component in a solid matrix-forming material that has been thermally softened. “Active component,” as used in Tsuei, includes numerous and widely varied types of agents (Tsuei, col. 4, lines 8-36). The general term “biocides” is listed among these agents, but there is no suggestion in Tsuei to encapsulate a triazole fungicide.

The Kanda reference discloses active agents bound within microparticles. The active agents include bactericides, fungicides, antiseptics, insecticides, herbicides, and anti-fouling agents. There is no suggestion in Kanda to use a triazole fungicide.

The Stock reference is an abstract of a conference presentation wherein the effects of formulation activity of foliar-applied pesticides is reviewed. Topics reviewed include

microencapsulation and also methods of improving penetration. Stock makes the general statement that microencapsulation lowers toxic potential, reduces volatility and improves persistence. The Stock reference does not teach for which compounds this finding applies. Further, the Examiner is directed to page 17, line 4 of the instant specification, where it is disclosed that "The particles of the present invention differ from "microcapsules," in which a polymeric shell surrounds a liquid or solid core that contains an active ingredient."

Stock also teaches that penetration of fluquinconazole, a compound of the instant claims, into vine is enhanced by the presence of a surfactant (Synperionic). The instant claims are not directed to the improvement of penetration by the presence of surfactant, therefore, this teaching is irrelevant with respect to instant claims.

The Russell reference is directed to combinations of lytic enzymes and fungicides, having a synergistic effect. Triazole fungicides are among the fungicides. The Russell reference does not teach the triazole fungicides of the present invention dispersed in a solid polymer matrix.

The Examiner specifically contends that: 1) Tsuei puts actives in a polymer matrix and that it would be obvious to incorporate an Autant triazole as the agricultural active; 2) Kanda and Stock specify fungicides for crop protection by foliar application; and 3) Tsuei discloses the instant inventive composition microparticle polymers, except for the particular triazoles; which are taught by the Secondary references.

Applicants respectfully traverse. The Tsuei reference teaches a delivery method for delivering an active selected from an extensive list of possibilities. Over thirty different classes of actives ranging from vitamins to wrinkle treatments are listed in the Tsuei reference (col. 4, lines 8-36).

The Examiner further contends that the secondary references, i.e. Kanda, Stock, Autant, and Russell, teach triazole fungicides. While it is true that Stock, Russell and Autant do contain reference to triazole fungicides, this is irrelevant in regard to the instant claims. The agricultural application of triazole fungicides is recognized in the art (see, for example, the present application, page 1, line 9 - page 2, line 7).

**Unexpected results are afforded by the presently claimed invention.**

In contrast to the above references, the instant application is directed to a particle comprising triazole fungicides dispersed in a polymer matrix. Many of the triazole fungicides are highly phytotoxic to the very plants species they are meant to protect (See page 2, line 8 - page 3, line 2 of the specification). Prior to the present disclosure, it would have been expected that these triazole fungicides would be phytotoxic, even when applied to seeds or plants using a time release method of delivery. For example, it would have been expected that once the active agent was released, the phytotoxic effect would then occur. The examples in the instant specification clearly demonstrate, however, that a microparticle comprising a triazole fungicide entrapped in a polymer matrix is less phytotoxic than the same triazole fungicide applied directly to seeds and plants. For instance, Example 9 shows the phytotoxic effect of cyproconazole when used as a seed treatment for wheat. A commercial fast release formulation of cyproconazole (Alto 005LS) shows marked phytotoxicity 10 days after application. With an application of 16 gm of cyproconazole per 100 kg of seed, the height of the treated plant is reduced to 7.8 % the height of an untreated control. Contrarily, plants treated with cyproconazole dispersed in the particle matrix, according to the present invention, maintained 87.1 % of the control plant height (Fig. 3).

**Unexpected results are demonstrated for several triazole fungicides.**

The Examiner contends that only cyproconazole shows the unexpected results. Applicants traverse. Examples 1-16 are concerned with cyproconazole. Examples 17 and 18 use the fungicide tebuconazole. The table in example 18, as well as Figure 14, illustrates the surprising softening effect of the instant invention, compared to a fast release tebuconazole formulation. Likewise, the data in Examples 19 and 20 and in figure 15 show similar results for epoxiconazole.

The presently claimed compositions and methods allow the application of phytotoxic agents at levels that would be expected to cause damage to crops, thereby resulting in improved bioefficacy.


The Examiner further alleges that the unexpected benefits are not claimed. The correct standard is not whether the unexpected benefits are claimed, rather, it is whether the claimed invention exhibits some unexpected result. *In re Baird*, 16 F.3d 380, 383, 29 U.S.P.Q.2d 1550, 1552 (Fed. Cir. 1994), *In re Jones*, 958 F.2d 347, 350, 21 U.S.P.Q.2d 1941, 1943 (Fed. Cir. 1992), *In re Chupp*, 816 F.2d 643, 646, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987). The PTO must consider comparative data in the specification in determining whether the claimed invention provides unexpected results. *In re Soni*, 54 F.3d 746, 34 U.S.P.Q.2d 1684 (Fed. Cir. 1995). The instant examples clearly show that the triazole fungicides of the instant invention are unexpectedly softened compared to commercial fast release formulations of the same fungicides. Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

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The Examiner is encouraged to call the undersigned should any further action be required. Should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason, the

Commissioner is authorized to deduct said fees from Deposit Account No. 01-2508/11897.0100.CPUS00.

Respectfully submitted,



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